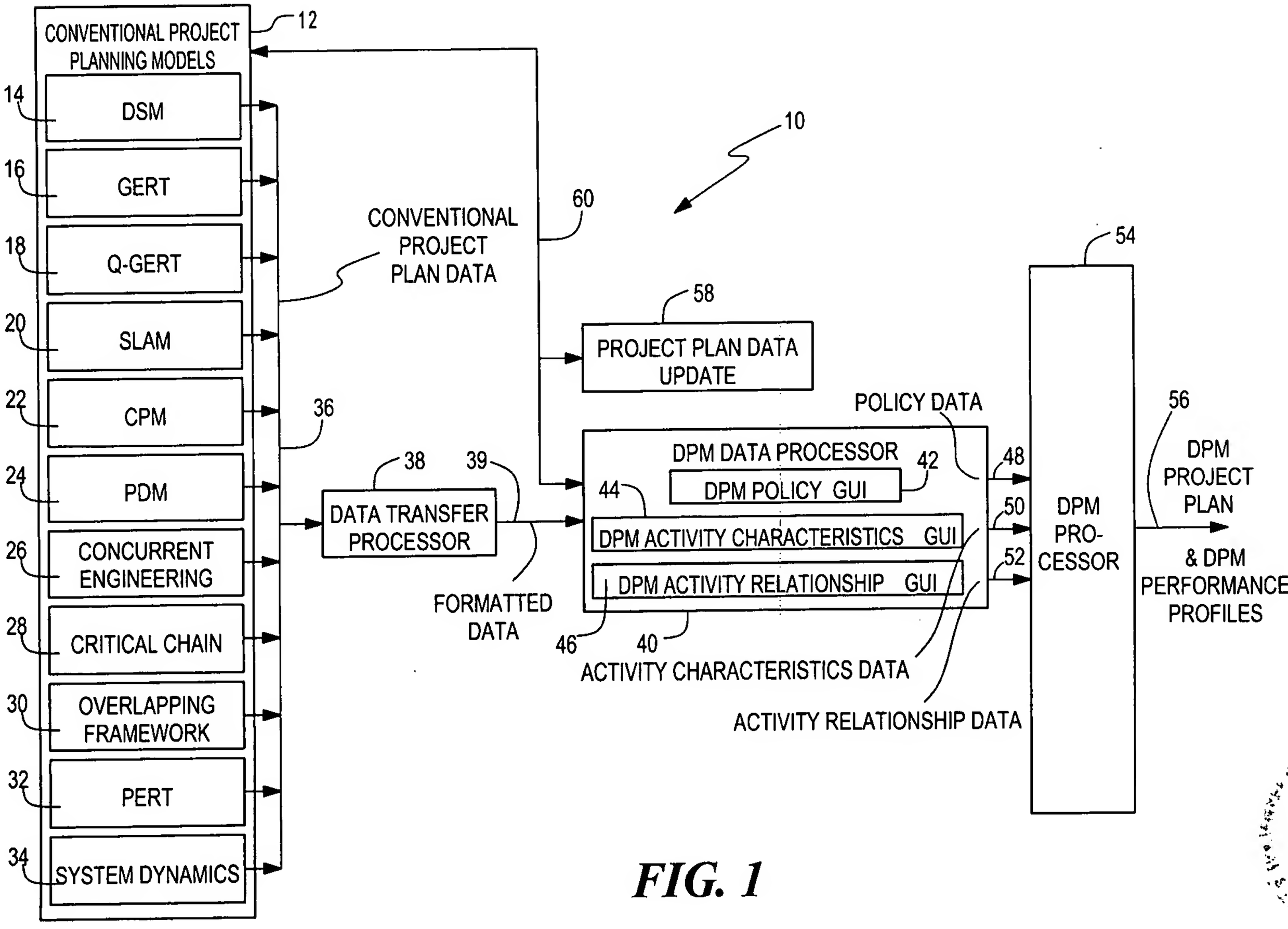
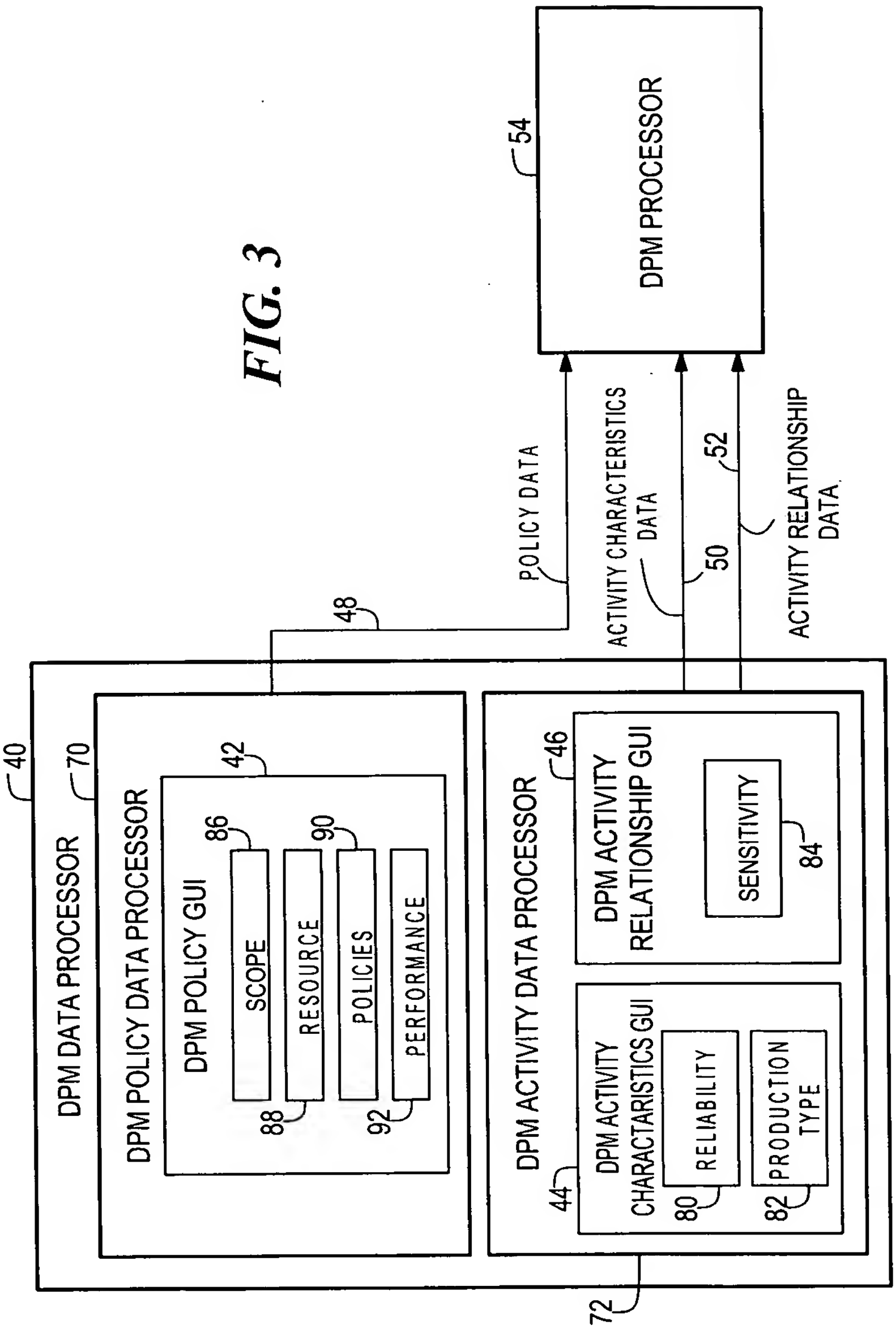

CONVENTIONAL PROJECT PLANNING MODELS
12
14
DSM
16
GERT
18
Q-GERT
20
SLAM
22
CPM
24
PDM
26
CONCURRENT ENGINEERING
28
CRITICAL CHAIN
30
OVERLAPPING FRAMEWORK
32
PERT
34
SYSTEM DYNAMICS
36
10
60
CONVENTIONAL PROJECT PLAN DATA
58
PROJECT PLAN DATA UPDATE
38
39
DATA TRANSFER PROCESSOR
FORMATTED DATA
POLICY DATA
DPM DATA PROCESSOR
42
DPM POLICY GUI
44
DPM ACTIVITY CHARACTERISTICS GUI
DPM ACTIVITY RELATIONSHIP GUI
46
40
ACTIVITY CHARACTERISTICS DATA
ACTIVITY RELATIONSHIP DATA
48
50
52
54
DPM PRO-CESSOR
56
DPM PROJECT PLAN
& DPM PERFORMANCE PROFILES

FIG. 1

PATENT AND TRADEMARK OFFICE

FIG. 2

FIG. 3


DPM DATA PROCESSOR
40
DPM POLICY DATA PROCESSOR
70
DPM POLICY GUI
42
SCOPE
86
88
RESOURCE
90
POLICIES
92
PERFORMANCE
DPM ACTIVITY DATA PROCESSOR
46
DPM ACTIVITY CHARACTARISTICS GUI
44
RELIABILITY
80
PRODUCTION TYPE
82
DPM ACTIVITY RELATIONSHIP GUI
SENSITIVITY
84
72
DPM PROCESSOR
54
POLICY DATA
48
ACTIVITY CHARACTERISTICS DATA
50
ACTIVITY RELATIONSHIP DATA
52

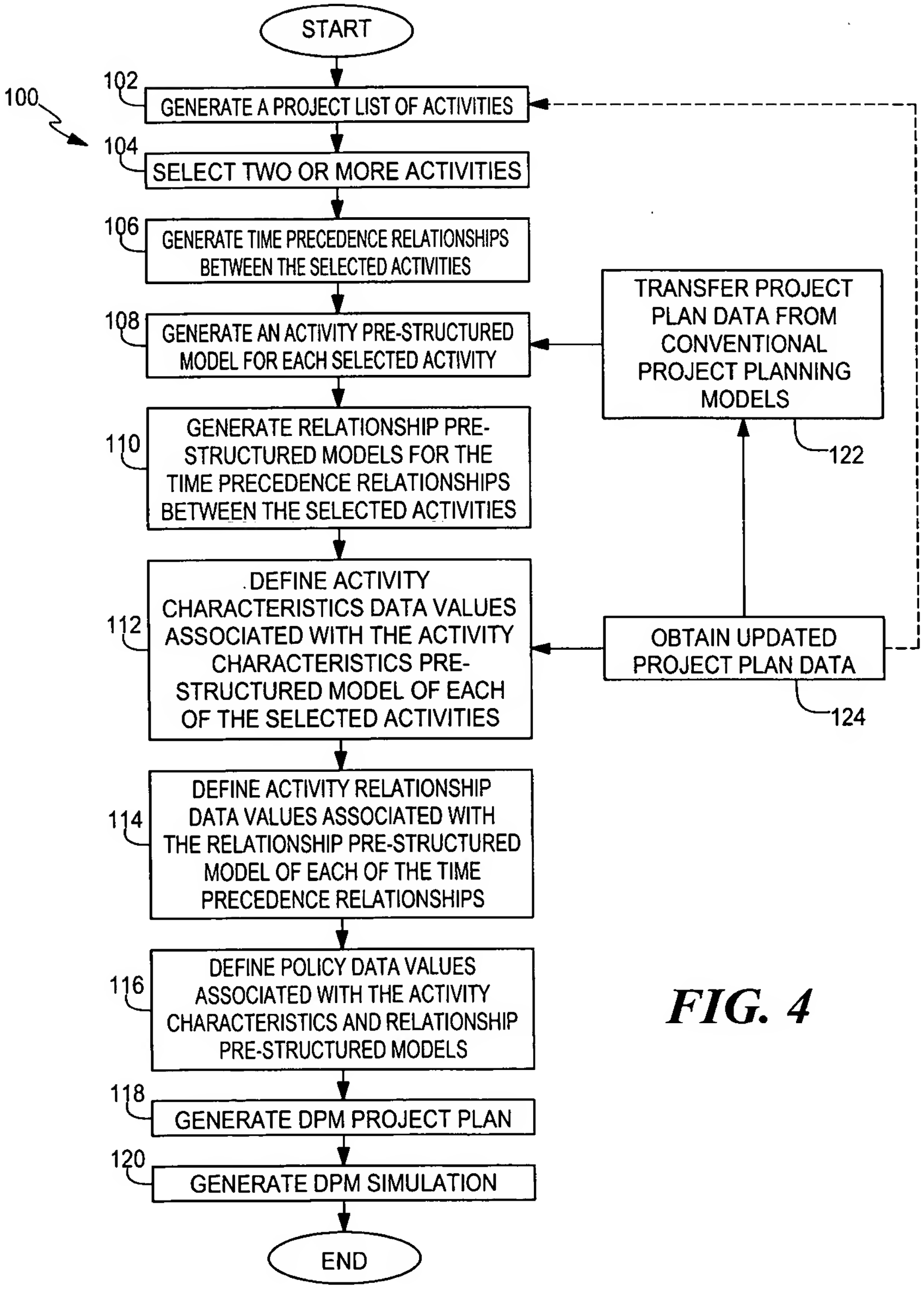

START
100
102
GENERATE A PROJECT LIST OF ACTIVITIES
104
SELECT TWO OR MORE ACTIVITIES
106
GENERATE TIME PRECEDENCE RELATIONSHIPS BETWEEN THE SELECTED ACTIVITIES
108
GENERATE AN ACTIVITY PRE-STRUCTURED MODEL FOR EACH SELECTED ACTIVITY
110
GENERATE RELATIONSHIP PRE-STRUCTURED MODELS FOR THE TIME PRECEDENCE RELATIONSHIPS BETWEEN THE SELECTED ACTIVITIES
112
DEFINE ACTIVITY CHARACTERISTICS DATA VALUES ASSOCIATED WITH THE ACTIVITY CHARACTERISTICS PRE-STRUCTURED MODEL OF EACH OF THE SELECTED ACTIVITIES
114
DEFINE ACTIVITY RELATIONSHIP DATA VALUES ASSOCIATED WITH THE RELATIONSHIP PRE-STRUCTURED MODEL OF EACH OF THE TIME PRECEDENCE RELATIONSHIPS
116
DEFINE POLICY DATA VALUES ASSOCIATED WITH THE ACTIVITY CHARACTERISTICS AND RELATIONSHIP PRE-STRUCTURED MODELS
118
GENERATE DPM PROJECT PLAN
120
GENERATE DPM SIMULATION
END
TRANSFER PROJECT PLAN DATA FROM CONVENTIONAL PROJECT PLANNING MODELS
122
OBTAIN UPDATED PROJECT PLAN DATA
124

FIG. 4

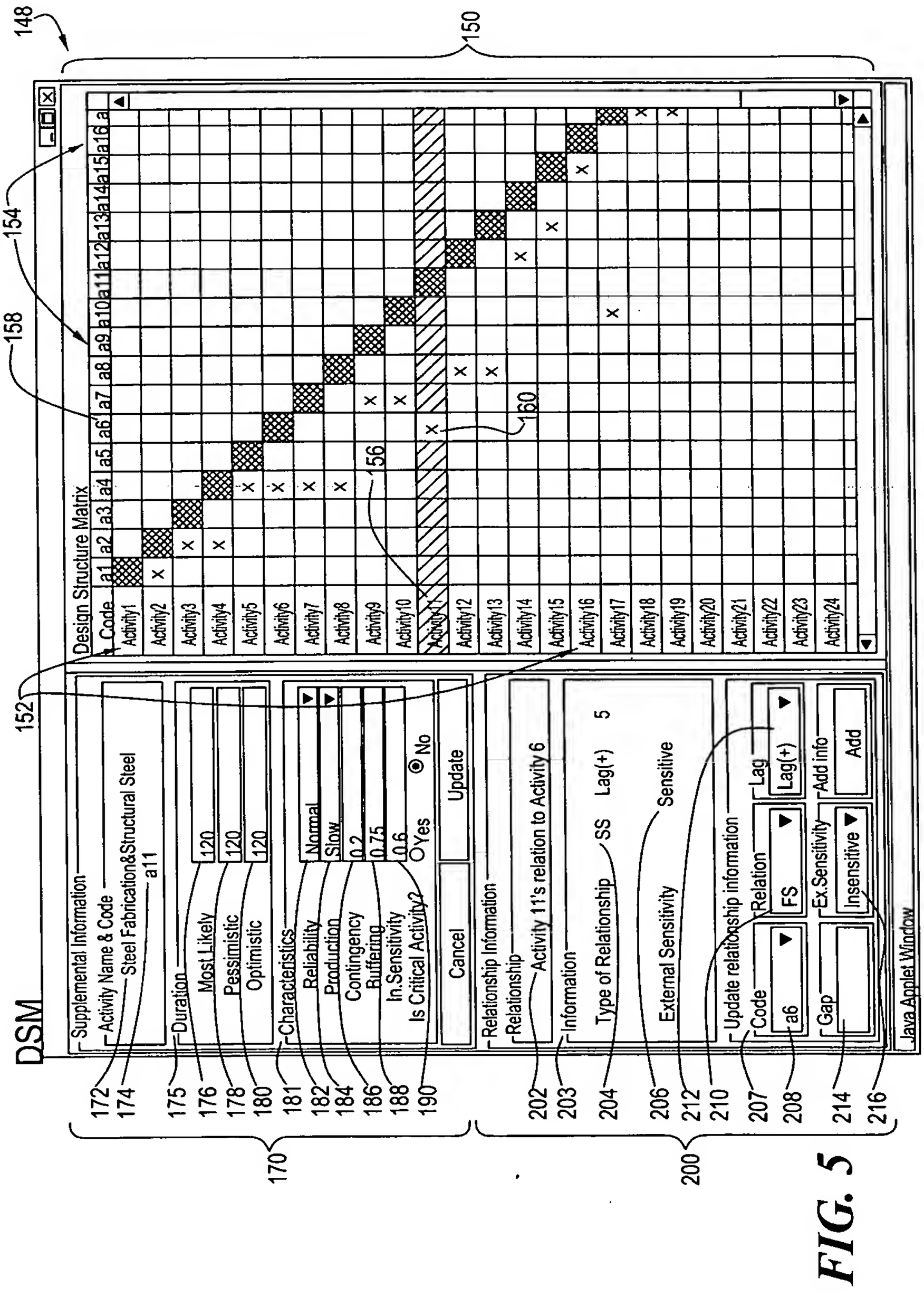

148
150
154
158
152
160
156
Design Structure Matrix
Code
a1 a2 a3 a4 a5 a6 a7 a8 a9 a10 a11 a12 a13 a14 a15 a16 a
Activity1
Activity2
Activity3
Activity4
Activity5
Activity6
Activity7
Activity8
Activity9
Activity10
Activity11
Activity12
Activity13
Activity14
Activity15
Activity16
Activity17
Activity18
Activity19
Activity20
Activity21
Activity22
Activity23
Activity24
DSM
Supplemental Information
Activity Name & Code
Steel Fabrication&Structural
a11
Duration
120
Most Likely
120
Pessimistic
120
Optimistic
Characteristics
Normal
Reliability
Slow
Production
0.2
Contingency
0.75
Buffering
0.6
In.Sensitivity
Yes
Is Critical Activity?
Update
Cancel
No
Relationship Information
Relationship
Activity 11's relation to Activity 6
Information
Type of Relationship
SS
Lag(+) 5
External Sensitivity
Sensitive
Update relationship information
Code
a6
Relation
FS
Gap
Ex.Sensitivity
Insensitive
Lag
Lag(+)
Add info
Add
Java Applet Window
170
172
174
175
176
178
180
181
182
184
186
188
190
200
202
203
204
206
212
210
207
208
214
216

FIG. 5

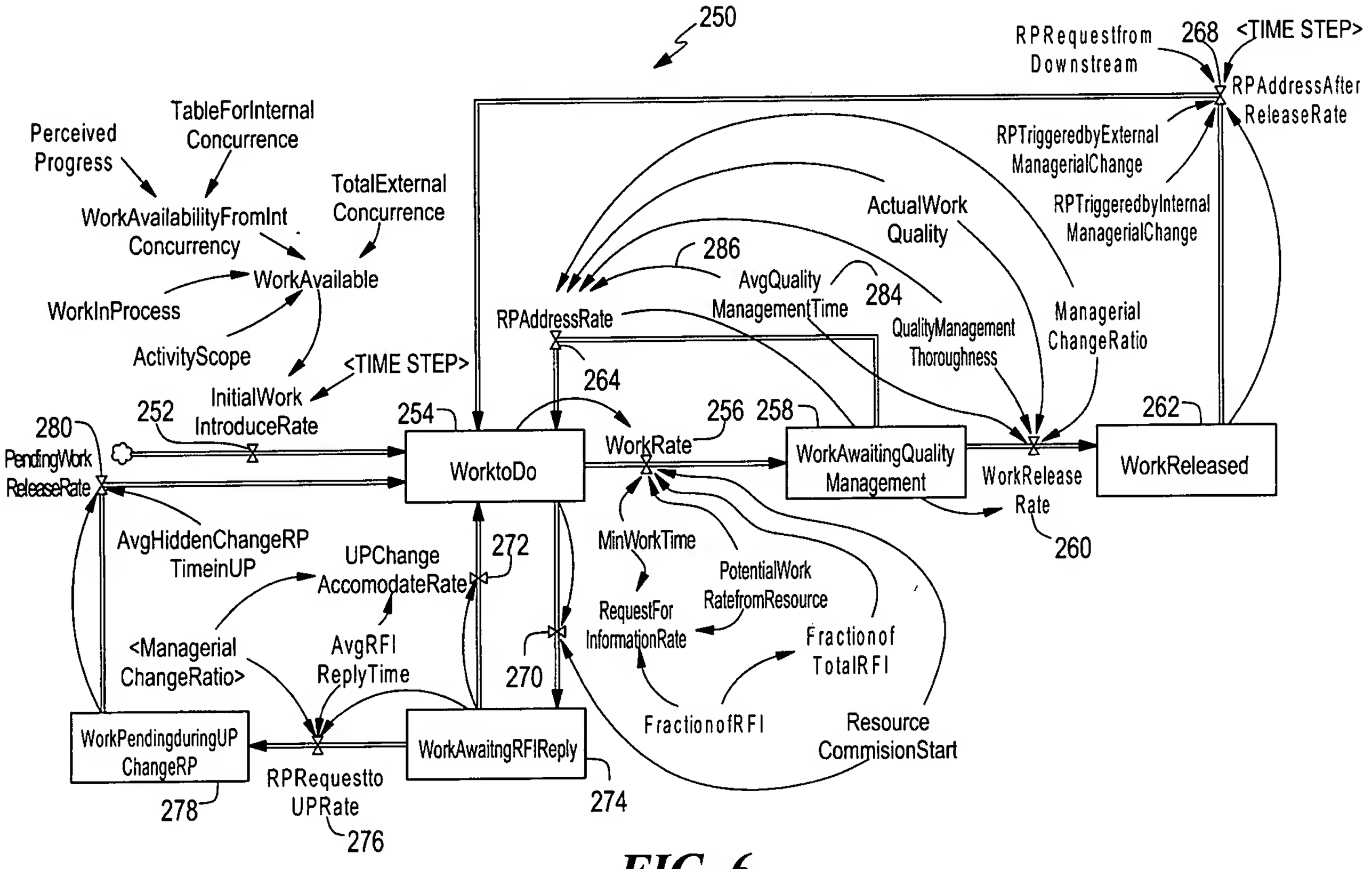

250
RPRequestfrom Downstream
268
<TIME STEP>
RPAddressAfter ReleaseRate
TableForInternal Concurrence
Perceived Progress
TotalExternal Concurrence
WorkAvailabilityFromInt Concurrency
WorkAvailable
WorkInProcess
ActivityScope
<TIME STEP>
InitialWork IntroduceRate
252
280
PendingWork ReleaseRate
254
WorktoDo
RPTriggeredbyExternal ManagerialChange
RPTriggeredbyInternal ManagerialChange
ActualWork Quality
286
AvgQuality ManagementTime
284
RPAddressRate
264
QualityManagement Thoroughness
Managerial ChangeRatio
256
258
WorkRate
WorkAwaitingQuality Management
262
WorkReleased
WorkRelease Rate
260
AvgHiddenChangeRP TimeinUP
UPChange AccomodateRate
272
MinWorkTime
PotentialWork RatefromResource
RequestFor InformationRate
FractionofTotalRFI
<Managerial ChangeRatio>
AvgRFI ReplyTime
270
FractionofRFI
Resource CommisionStart
WorkPendingduringUP ChangeRP
278
RPRequestto UPRate
276
WorkAwaitngRFIReply
274

FIG. 6

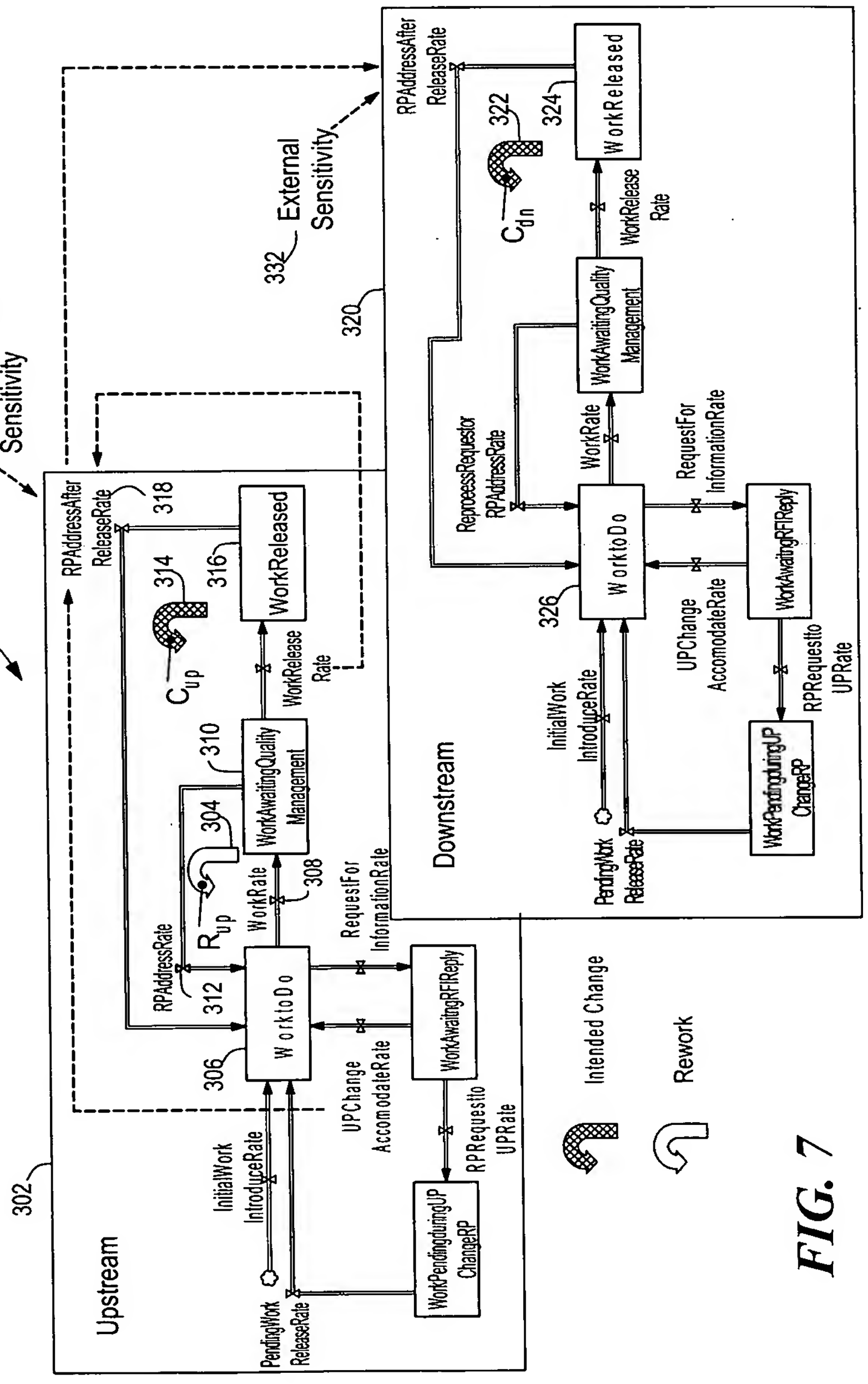

300
Internal Sensitivity
330
External Sensitivity
332
RPAddressAfter ReleaseRate
318
320
314
316
C_{up}
WorkReleased
WorkRelease Rate
310
304
308
WorkAwaitingQuality Management
WorkRate
R_{up}
RPAddressRate
312
306
WorktoDo
RequestFor InformationRate
UPChange AccomodateRate
WorkAwaitingRFIReply
RPRequestto UPRate
WorkPendingduringUP ChangeRP
InitialWork IntroduceRate
PendingWork ReleaseRate
Upstream
302
Downstream
322
324
C_{dn}
WorkReleased
WorkRelease Rate
WorkAwaitingQuality Management
ReprocessRequestor RPAddressRate
326
WorktoDo
RequestFor InformationRate
UPChange AccomodateRate
WorkAwaitingRFIReply
RPRequestto UPRate
WorkPendingduringUP ChangeRP
InitialWork IntroduceRate
PendingWork ReleaseRate
Intended Change
Rework

FIG. 7

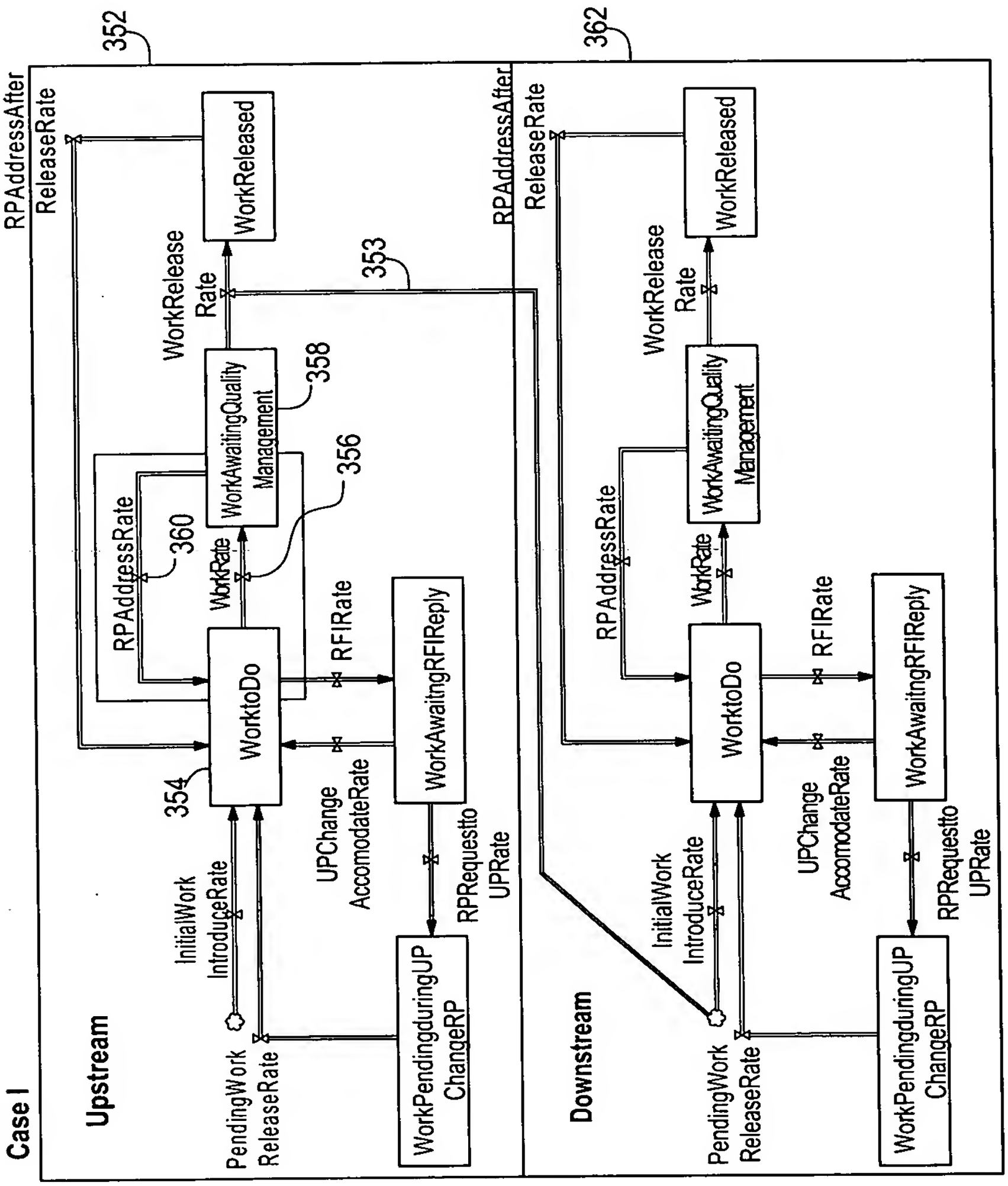

Case I
Upstream
Downstream
350
352
353
354
356
358
360
362
RPAddressAfter ReleaseRate
WorkReleased
WorkRelease Rate
WorkAwaitingQuality Management
RPAddressRate
WorkRate
WorktoDo
RFIRate
WorkAwaitngRFIReply
InitialWork IntroduceRate
UPChange AccomodateRate
RPRequestto UPRate
PendingWork ReleaseRate
WorkPendingduringUP ChangeRP

FIG. 8

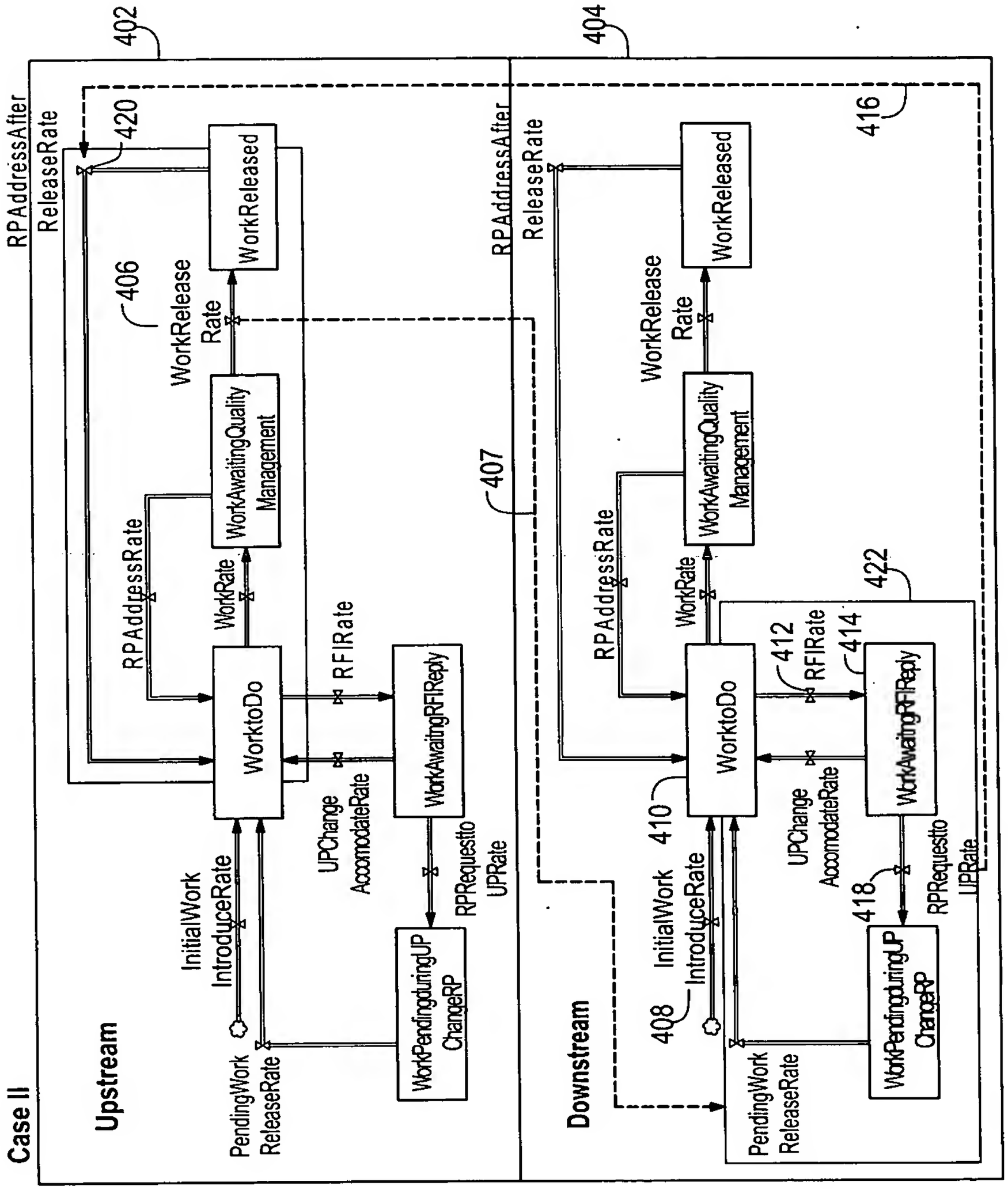

Case II
Upstream
Downstream
402
404
416
420
406
407
422
410
412
414
418
408
400
RPAddressAfter
ReleaseRate
WorkReleased
WorkRelease Rate
WorkAwaitingQuality Management
RPAddressRate
WorkRate
WorktoDo
RFIRate
WorkAwaitingRFIReply
UPChange AccomodateRate
RPRequestto UPRate
InitialWork IntroduceRate
PendingWork ReleaseRate
WorkPendingduringUP ChangeRP

FIG. 9

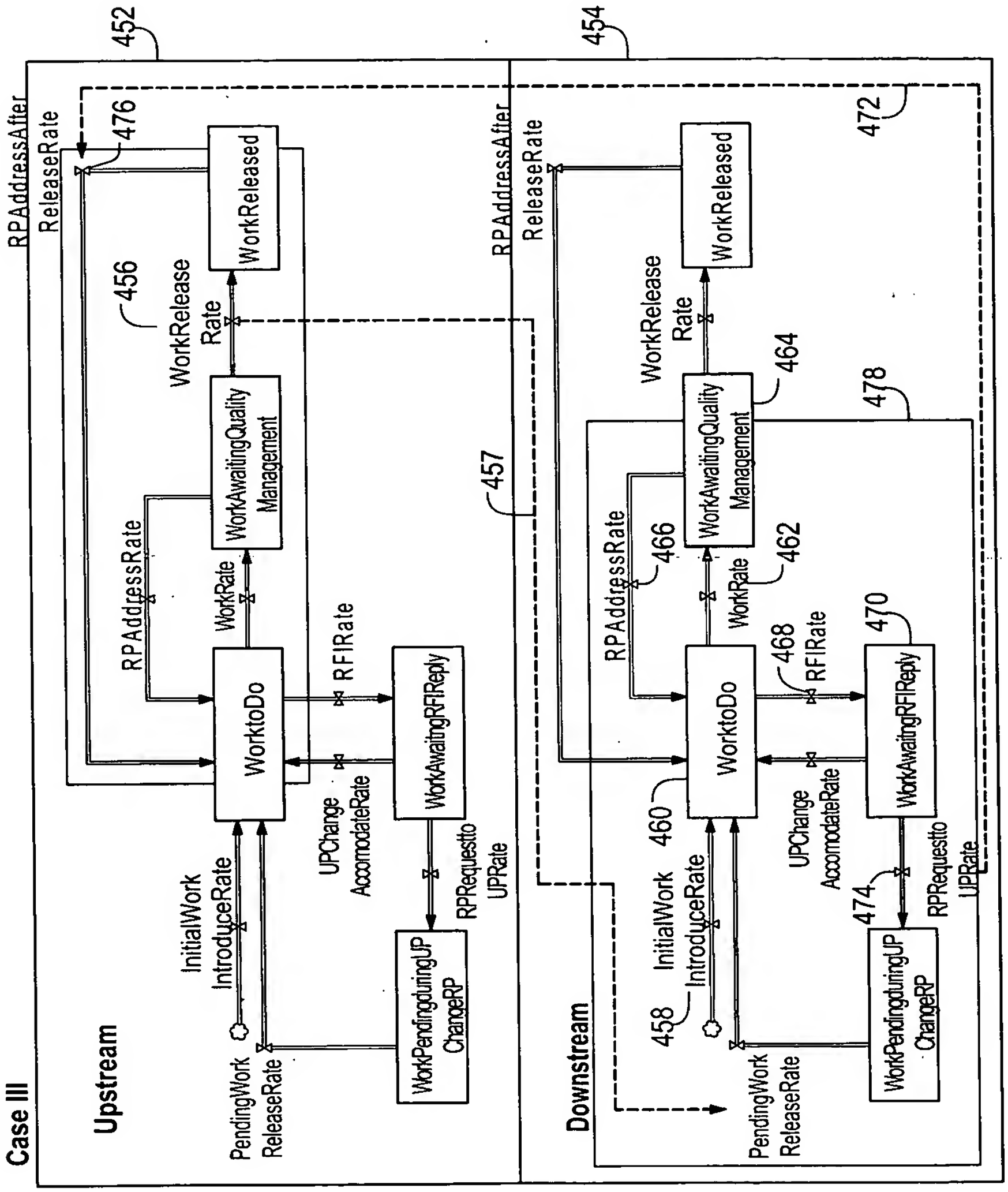

Case III
Upstream
Downstream
452
454
472
476
456
457
458
460
462
464
466
468
470
474
478
450
RPAddressAfter
ReleaseRate
WorkReleased
WorkReleaseRate
WorkAwaitingQuality Management
RPAddressRate
WorkRate
WorktoDo
RFIRate
WorkAwaitingRFIReply
UPChange AccomodateRate
RPRequestto UPRate
InitialWork IntroduceRate
PendingWork ReleaseRate
WorkPendingduringChangeRP

FIG. 10

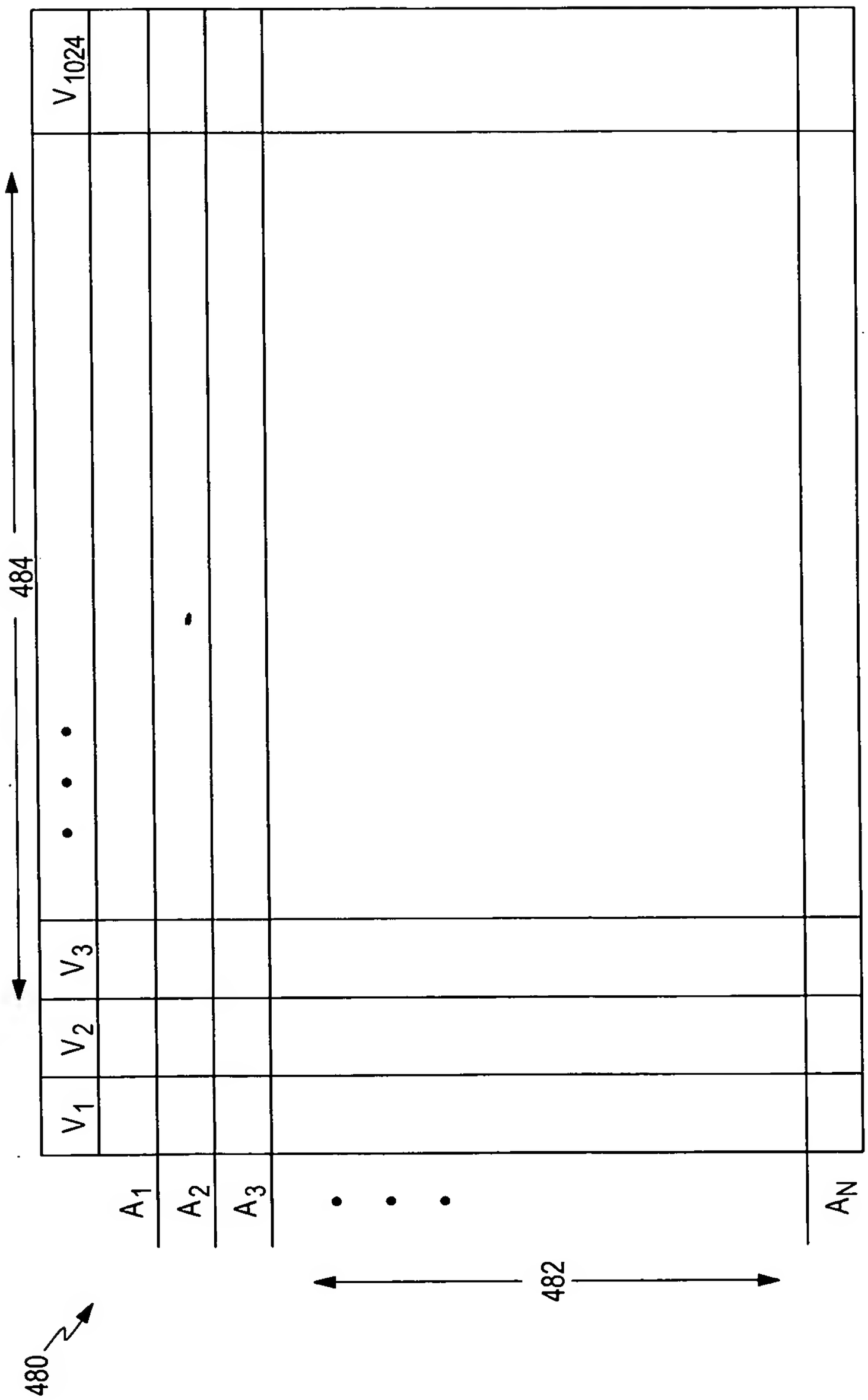

V1024
484
V3
V2
V1
A1
A2
A3
AN
482
480
PRE-STRUCTURED MODEL VARIABLES

FIG. 11

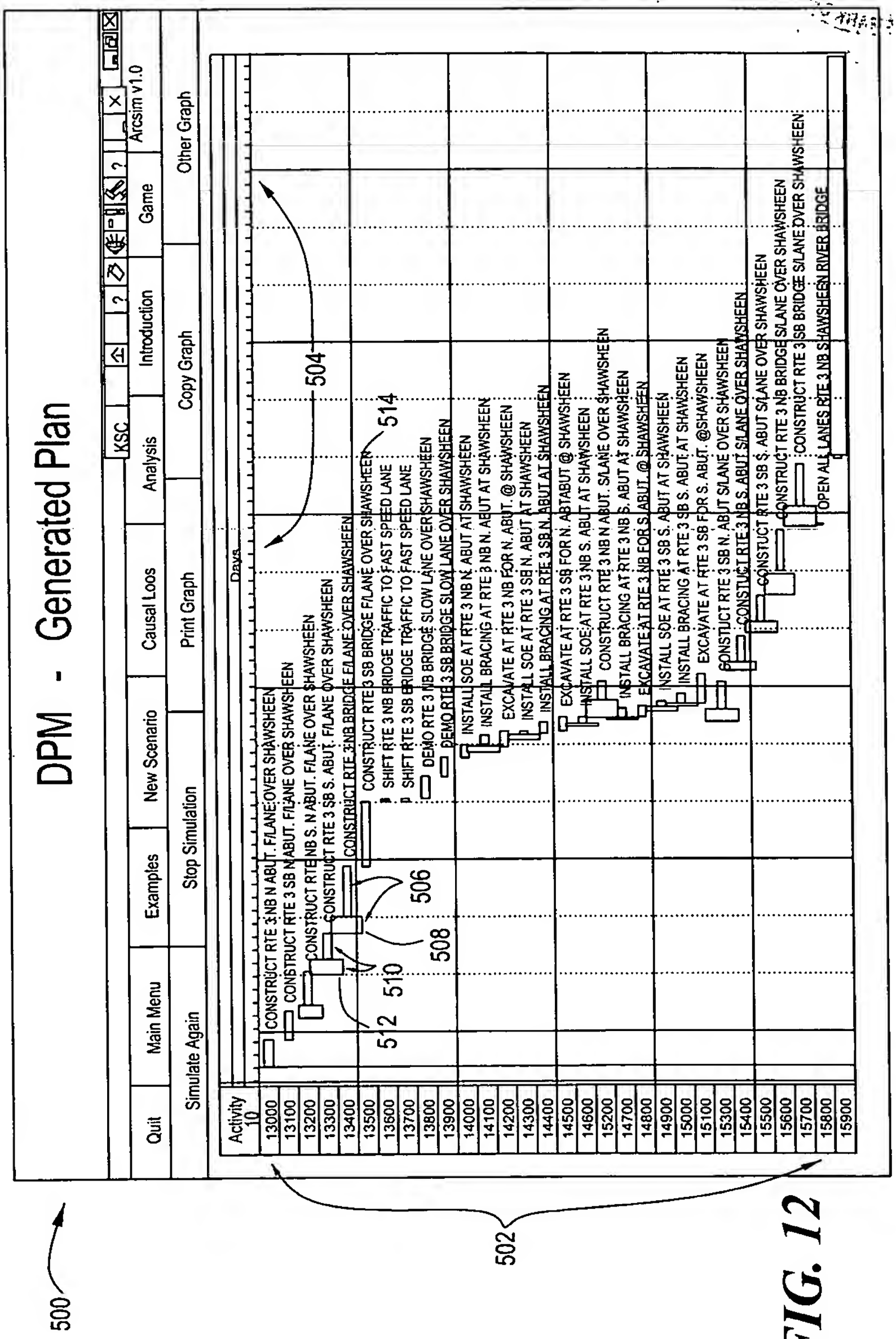

DPM - Generated Plan
Arcsim v1.0
Other Graph
Game
Examples
New Scenario
Causal Loos
Analysis
Introduction
Stop Simulation
Print Graph
Copy Graph
Quit
Main Menu
Simulate Again
Days
Activity 10
13000
13100
13200
13300
13400
13500
13600
13700
13800
13900
14000
14100
14200
14300
14400
14500
14600
15200
14700
14800
14900
15000
15100
15300
15400
15500
15600
15700
15800
15900
CONSTRUCT RTE 3 SB BRIDGE F/LANE OVER SHAWSHEEN
SHIFT RTE 3 NB BRIDGE TRAFFIC TO FAST SPEED LANE
SHIFT RTE 3 SB BRIDGE TRAFFIC TO FAST SPEED LANE
DEMO RTE 3 NB BRIDGE SLOW LANE OVER SHAWSHEEN
DEMO RTE 3 SB BRIDGE SLOW LANE OVER SHAWSHEEN
INSTALL SOE AT RTE 3 NB N. ABUT AT SHAWSHEEN
INSTALL BRACING AT RTE 3 NB N. ABUT AT SHAWSHEEN
EXCAVATE AT RTE 3 NB FOR N. ABUT. @ SHAWSHEEN
INSTALL SOE AT RTE 3 SB N. ABUT AT SHAWSHEEN
INSTALL BRACING AT RTE 3 SB N. ABUT AT SHAWSHEEN
EXCAVATE AT RTE 3 SB FOR N. ABUTABUT @ SHAWSHEEN
INSTALL SOE AT RTE 3 NB S. ABUT AT SHAWSHEEN
CONSTRUCT RTE 3 NB N ABUT. S/LANE OVER SHAWSHEEN
INSTALL BRACING AT RTE 3 NB S. ABUT AT SHAWSHEEN
EXCAVATE AT RTE 3 NB FOR S. ABUT. @ SHAWSHEEN
INSTALL SOE AT RTE 3 SB S. ABUT AT SHAWSHEEN
INSTALL BRACING AT RTE 3 SB S. ABUT AT SHAWSHEEN
EXCAVATE AT RTE 3 SB FOR S. ABUT. @SHAWSHEEN
CONSTRUCT RTE 3 SB N. ABUT S/LANE OVER SHAWSHEEN
CONSTUCT RTE 3 NB S. ABUT S/LANE OVER SHAWSHEEN
CONSTUCT RTE 3 SB S. ABUT S/LANE OVER SHAWSHEEN
CONSTRUCT RTE 3 NB BRIDGE S/LANE OVER SHAWSHEEN
CONSTRUCT RTE 3 SB BRIDGE S/LANE OVER SHAWSHEEN
OPEN ALL LANES RTE 3 NB SHAWSHEEN RIVER BRIDGE
500
502
504
506
508
510
512
514

FIG. 12

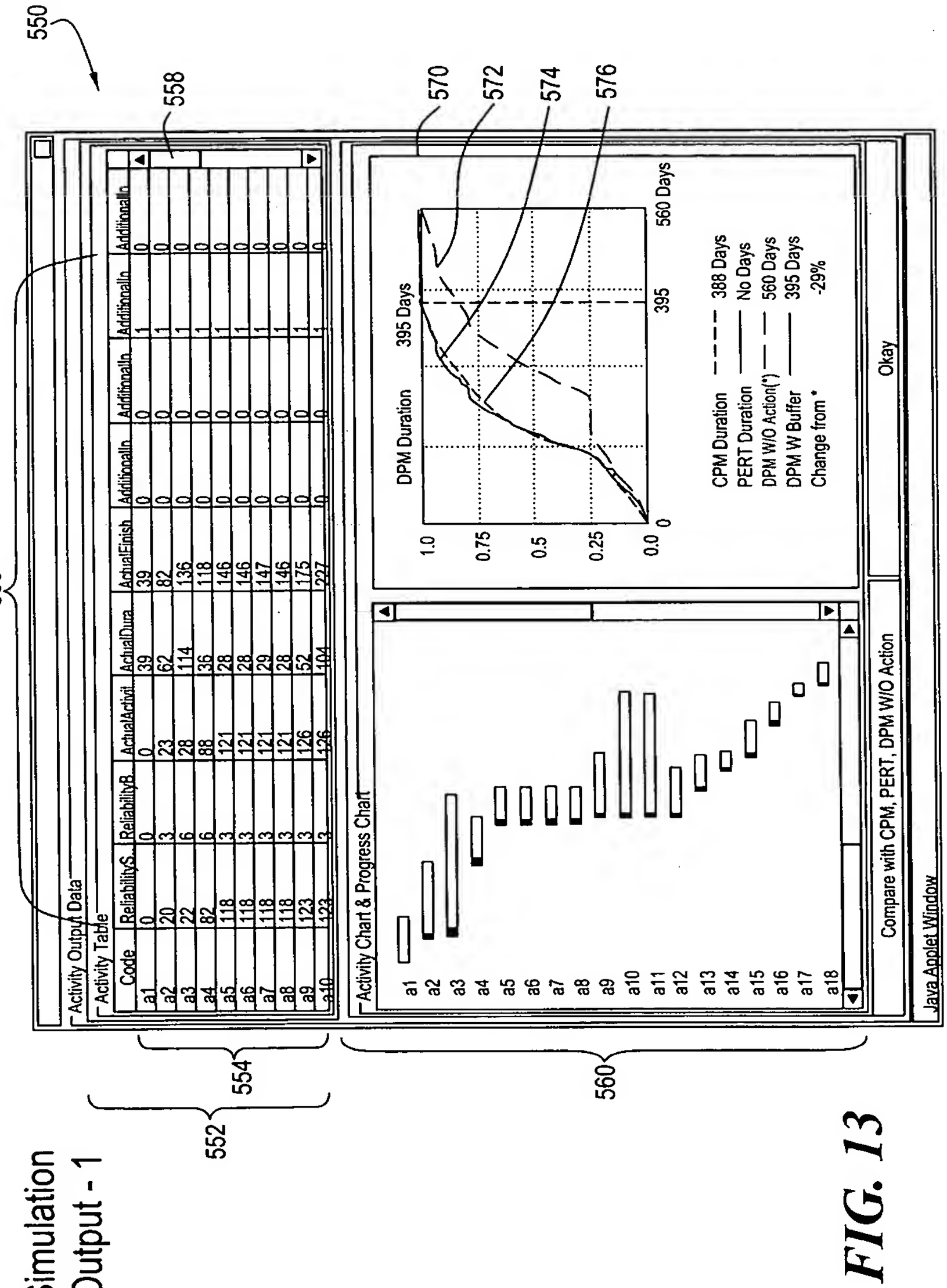

Simulation Output - 1
550
552
554
556
558
560
570
572
574
576
Activity Output Data
Activity Table
Code
ReliabilityS..
ReliabilityB..
ActualActivit..
ActualDura..
ActualFinish
AdditionalIn
AdditionalIn
AdditionalIn
a1 0 0 0 39 39 0 0 1 0
a2 20 3 23 62 82 0 0 1 0
a3 22 6 28 114 136 0 0 1 0
a4 82 6 88 36 118 0 0 1 0
a5 118 3 121 28 146 0 0 1 0
a6 118 3 121 28 146 0 0 1 0
a7 118 3 121 29 147 0 0 1 0
a8 118 3 121 28 146 0 0 1 0
a9 123 3 126 52 175 0 0 1 0
a10 123 3 126 104 227 0 0 1 0
Activity Chart & Progress Chart
a1 a2 a3 a4 a5 a6 a7 a8 a9 a10 a11 a12 a13 a14 a15 a16 a17 a18
DPM Duration
395 Days
560 Days
1.0
0.75
0.5
0.25
0.0
0
395
CPM Duration 388 Days
PERT Duration No Days
DPM W/O Action(*) 560 Days
DPM W Buffer 395 Days
Change from * -29%
Compare with CPM, PERT, DPM W/O Action
Okay
Java Applet Window

FIG. 13

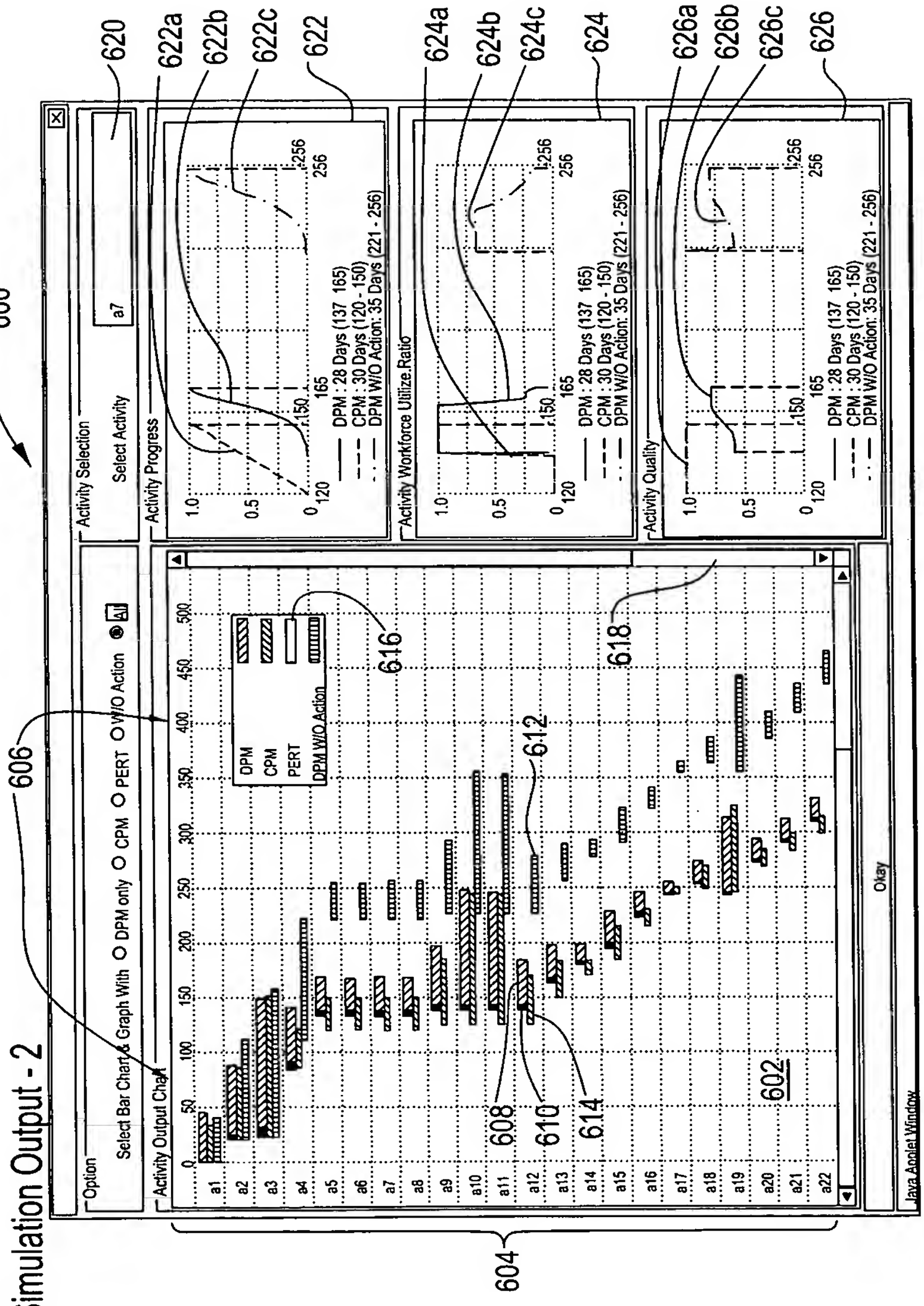

Simulation Output - 2
600
606
620
622a
622b
622c
622
624a
624b
624c
624
626a
626b
626c
626
Activity Selection
Select Activity
a7
Activity Progress
Activity Workforce Utilize.Ratio
Activity Quality
DPM : 28 Days (137 165)
CPM : 30 Days (120 - 150)
DPM W/O Action: 35 Days (221 - 256)
Option
Select Bar Chart & Graph With
DPM only
CPM
PERT
W/O Action
All
Activity Output Chart
DPM
CPM
PERT
DPM W/O Action
616
618
612
608
610
614
602
604
Okay
Java Applet Window

FIG. 14

BEST AVAILABLE COPY

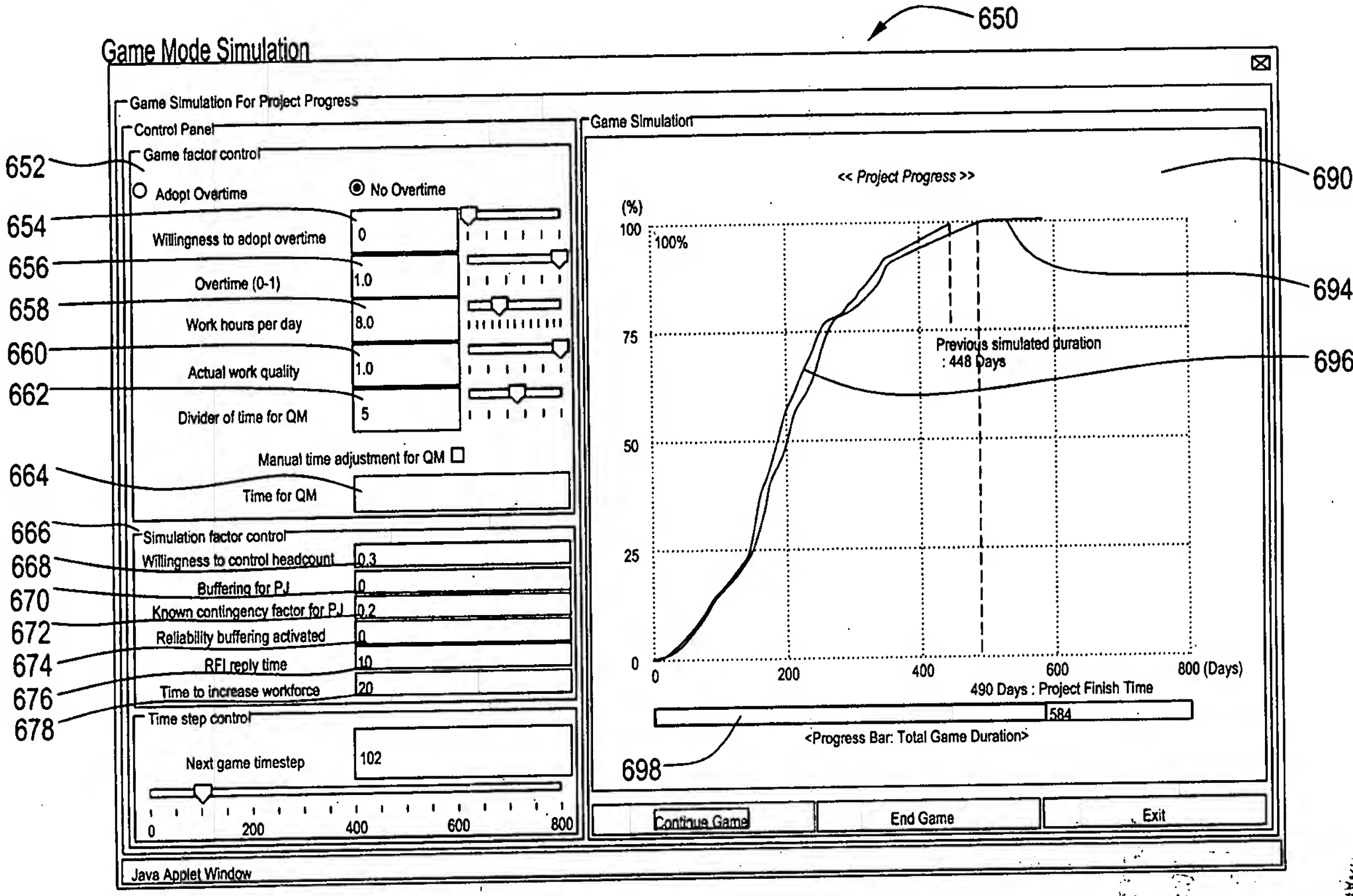


FIG. 15

DYNAMIC PLANNING METHOD SYSTEM
Feniosky Peña-Mora, et al.
10/068,119